The following is a document that was developed as part of the OSD CAIV Flagship series of workshops where LTC Robert F. Arnone, as the Product Manager, represented the P3I BAT program; one of the seven OSD CAIV Flagships. The document was provided as info to the Modernization Through Spares CAIV Workshop conducted 28-29 May 1997 and has been since modified to address MTS issues.

CAIV OBSERVATIONS

1. Fundamentally, CAIV does not introduce any new skills a PM and his team must learn. Every project must remain aware of cost implications as the user requirements are addressed within the technical and schedule challenges associated with the effort.

2. In my personal view, I believe CAIV offers the license to address the *quantitative* values associated with the requirements during program development rather than waiting for a formal, structured process to make adjustments to supporting documents. CAIV also recognizes that we become smarter as programs progress.

3. Using P3I BAT as an example, there is no argument that P3I BAT should perform better than the baseline in terms of the key performance parameters that include warhead performance, targets (type and conditions), weather, and countermeasures.

In order to get the P3I BAT program approved and to have the contractor begin work, these key performance parameters (KPPs) have quantitative values based on some analytical assessments and some *qualitative* judgements that represent improvements. That's OK to begin defining the system.

As the program progresses and the technology matures, CAIV offers the opportunity to determine the operational utility and cost impacts of pursuing specific *quantitative* values assigned to the KPPs.

CAIV recognizes the dialogue that occurs between the developer and user throughout program execution that has (in my opinion) tended to be formally resolved at some major review. At such reviews, the PM was placed in a position to state that some *quantitative* performance level was not achieved and then the user would state that the performance that has been demonstrated is adequate for his needs. By that point, resources have been expended (wasted?) attempting to achieve the higher quantitative value.

4. Cost goals were established at the beginning of the program based on best-guesses of where the P3I BAT technologies may be years later during production. Cost bands (required-preferred) will serve as a more reasonable approach and to offer a basis for incentives. These bands could be adjusted (tightened) at each milestone based on the maturity of the technology.

5. My view of CAIV is that the combined developer and user communities establish cost and performance goals early in the program. As the program evolves, opportunities to make periodic system level cost and performance assessments should be made to calibrate the *quantitative* values applied to the KPPs.

For example, the program is initiated with the intent of improving performance in weather by 20% (notional; actual number is classified). As the program and the technology matures, we realize a demonstrated 18% improvement provides significant improvement on the battlefield. (In P3I BAT, we are planning on using loss exchange ratios (LERs) as the metric of choice to establish improvement.) We would determine the cost to develop, produce, and field the effort to achieve the 20% bogey and, with the user, determine if the added 2% is truly required or worth the investment.

6. The IPDT process would be utilized to make adjustments to the requirements document. The level of the IPDT would be determined on a case by case basis, or some predetermined threshold of allowable change (aka PM-TSM empowerment). Open communications within the respective development and user chains of command will keep key decision makers informed during development; program documentation updates are documented at milestone reviews.

BOTTOM LINE

CAIV, as a technique to conduct cost-performance trades during program execution, fits well in the teaming and resource limited environment. CAIV should NOT become a bureaucratic, add-on requirement, rather it represents a process that allows the developer and user the flexibility and maneuver room to allow the system to mature and true requirements to become clearer from a quantitative perspective. Point targets for cost should be avoided. Cost ranges should be established consistent with the program phase and maturity.

MODERNIZATION THROUGH SPARES

The efforts described above are being applied to a program definition and risk reduction (PDRR) program. A similar thought process applies as spares are being considered. The notion of a cost-performance trade off does not necessarily imply a reduction in performance. Indeed, spares applied to already-fielded (and aging?) systems could result in improved performance (e.g. introduction of new technologies).

The metrics to establish performance measures must be developed and agreed with the respective users. Remember, everything we do in the acquisition business ultimately will determine if a soldier returns home alive.

The PM or Item Manager delegates this CAIV Trade Off to the person or organization as he sees fit.

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